

What is claimed is:

1. A steel for a high-strength race comprising the following elements in percentage by weight:

C: 0.30 to 0.60%;

Si: 0.30 to 1.30%;

Mn: 0.5 to 1.5%;

B: 0.0050% or less;

Cr: 0.1 to 0.5%;

Mo: 0.1 to 0.5%;

Si + Mo: 0.5 to 1.4%;

Ni: 0.02 to 1.0%;

the balance of Fe and unavoidable impurities.

2. A steel for a high-strength race according to claim 1, wherein the steel further comprising, as the balanced part excluding Fe, one or more elements selected from the group consisting of the following elements in percentage by weight:

Bi: 0.05% or less, S: 0.10% or less, Ca: 0.01% or less, Zr: 0.10% or less, Sb: 0.10% or less and Pb: 0.01% or less.

3. A high-strength race comprising a steel according to claim 1, wherein the surface is hardened to have a hardness of 52 HRC or more by quenching and tempering.

4. A high-strength race comprising a steel according to claim 1, wherein the surface is hardened to have a hardness of 52 HRC or more by induction hardening and tempering.

5. A high-strength race according to claim 4, wherein the hardened surface contains a uniform martensite structure having a martensite ratio of 90% or more.

6. A method for producing a high-strength race comprising:

heating the steel according to claim 1 to 720 to 790 °C to carry out warm forging;

keeping the steel at 850 ± 10 °C to carry out normalizing, thereafter cooling the steel at a rate of 3 to 10 °C/min, keeping the steel at 550 °C for 20 minutes or more and allowing the steel to cool in the air;

fabricating the steel into a predetermined form by machining;

performing induction hardening and tempering for the steel; and further

finishing the steel into a final product form.

7. A method for producing a high-strength race according to claim 6, wherein the surface hardness after the induction hardening is performed is 58 HRC or more and the surface hardness after the tempering is performed is 52 HRC or more.